

How to Read ICC-ES Evaluation Service® ESR-1539® Part V Framing Tables

Preface:

This is the fifth in a series of technical bulletins designed to provide a greater understanding of the ICC Evaluation Service® evaluation report ESR-1539® providing information in Tables 11 - 14 dealing with framing connections referenced in the codes.

The driven fasteners (nails and staples) described in the evaluation report are used in engineered and non-engineered (prescriptive) structural connections and are primarily installed using power tools. This technical bulletin references **ESR-1539® Revised Date 07/2022.**

http://www.icc-es.org/Reports/pdf_files/ESR-1539.pdf

Background:

The first technical bulletin in this series, Terminology Used In ICC Evaluation Service Report ESR-1539®, provides a brief description of several technical and administrative terms used.

Part I: Basic ESR Information covers the first four pages of ESR-1539® and provides information on the document format, subject matter and product descriptions.

Part II: Fastener Basics and Table 1-3 covers the Table of Contents, fastener basics, applicable codes and information on the reference lateral design value of nails in some of the common species of wood used in building construction.

Part III: Fastener Withdrawal & Diaphragm Allowable Shear Tables addresses values for nail and staple withdrawal for a variety of wood specific gravities and details on the allowable shear tables for wood structural products.

Part IV: Shear Wall Allowable Shear Tables provides information on shear walls made of wood structural products (plywood and OSB) and fiberboard sheathing, gypsum lath, and other materials.

Figure A (first page Table 11 of ESR-1539®) is the fastening schedule for wood framing connections. As was noted in Bulletin Part I, the document is in compliance with the 2021, 2018, 2015, 2012 IBC® and IRC®.

Figure A has been divided into the fastening requirements prescribed:

- 1 In the 2021, 2018, 2015 and 2012 IBC® & IRC®
- 2 By table number per each code
- 3 Wall, ceiling/roof and floor family of connections
- 4 Connection Number in the reference code

These connection numbers are separated by code year and connection number within each family of connections.

Within each code, fasteners are prescribed either by:

- 5 The on-center spacing required for the connection
- 6 The number of fasteners per connection

3 → **TABLE 11—FASTENING SCHEDULE—WALL FRAMING¹**

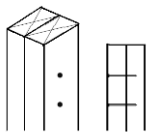
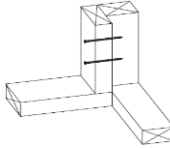
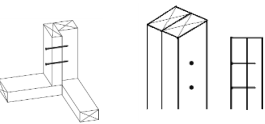
CONNECTION DESCRIPTION	MINIMUM FASTENING REQUIREMENTS PRESCRIBED IN THE CODE				ALTERNATIVE FASTENING REQUIREMENTS			
	2012 IBC Table 2304.9.1	2015 IBC Table 2304.10.1	2018 IBC Table 2304.10.1	2021 IBC ⁽¹⁾ Table 2304.10.2	All nails are carbon steel. ⁽¹⁾			
	2012 IRC Table R602.3(1)	2015 IRC Table R602.3(1)	2018 IRC Table R602.3(1)	2021 IRC ⁽¹⁾ Table R602.3(1)				
#	Nail Size [Type (inch)]	#	Nail Size [Type (inch)]	#	Nail Size [Type (inch)]	#	Nail Size [Type (inch)]	
Stud-to-stud (double studs) not at braced walls 	IBC Connection 9 @ 24" o.c.		IBC Connection 8 @ 24" o.c.		IBC Connection 8 @ 24" o.c.		IBC Connection 8 @ 24" o.c.	
	1	16d box (3 1/2 x .135)	1	16d com (3 1/2 x .162)	1	16d com (3 1/2 x .162)	1	16d com (3 1/2 x .162)
	@ 8" o.c.		@ 16" o.c.		@ 16" o.c.		@ 16" o.c.	
	1	3 x .131	1	3 x .131	1	3 x .131	1	3 x .131
	@ 8" o.c.		@ 16" o.c.		@ 16" o.c.		@ 16" o.c.	
	@ 8" o.c.		@ 16" o.c.		@ 16" o.c.		@ 16" o.c.	
	@ 8" o.c.		@ 16" o.c.		@ 16" o.c.		@ 16" o.c.	
	@ 8" o.c.		@ 16" o.c.		@ 16" o.c.		@ 16" o.c.	
	@ 8" o.c.		@ 16" o.c.		@ 16" o.c.		@ 16" o.c.	
	@ 8" o.c.		@ 16" o.c.		@ 16" o.c.		@ 16" o.c.	
	@ 8" o.c.		@ 16" o.c.		@ 16" o.c.		@ 16" o.c.	
	Stud-to-stud and abutting studs at intersecting wall corners at braced walls 	IBC Connection 9 @ 16" o.c.		IBC Connection 9 @ 16" o.c.		IBC Connection 9 @ 16" o.c.		@ 16" o.c.
1		16d com (3 1/2 x .162)	1	16d com (3 1/2 x .162)	1	16d com (3 1/2 x .162)	1	16d com (3 1/2 x .162)
@ 12" o.c.		@ 12" o.c.		@ 12" o.c.		@ 12" o.c.		
1		16d box (3 1/2 x .135)	1	16d box (3 1/2 x .135)	1	16d box (3 1/2 x .135)	1	16d box (3 1/2 x .135)
1		3 x .131	1	3 x .131	1	3 x .131	1	3 x .131
@ 8" o.c.		@ 8" o.c.		@ 8" o.c.		@ 8" o.c.		
1		16d com (3 1/2 x .162)	1	16d com (3 1/2 x .162)	1	16d com (3 1/2 x .162)	1	16d com (3 1/2 x .162)
@ 12" o.c.		@ 12" o.c.		@ 12" o.c.		@ 12" o.c.		
1		16d box (3 1/2 x .135)	1	16d box (3 1/2 x .135)	1	16d box (3 1/2 x .135)	1	16d box (3 1/2 x .135)
1		3 x .131	1	3 x .131	1	3 x .131	1	3 x .131
@ 8" o.c.		@ 8" o.c.		@ 8" o.c.		@ 8" o.c.		
Abutting studs at corners and intersections not at braced walls 		IBC Connection 23 @ 24" o.c.		IBC Connection 8 @ 24" o.c.		IBC Connection 8 @ 24" o.c.		IBC Connection 8 @ 24" o.c.
	1	16d com (3 1/2 x .162)	1	16d com (3 1/2 x .162)	1	16d com (3 1/2 x .162)	1	16d com (3 1/2 x .162)
	@ 16" o.c.		@ 16" o.c.		@ 16" o.c.		@ 16" o.c.	
	1	3 x .131	1	3 x .131	1	3 x .131	1	3 x .131
	@ 16" o.c.		@ 16" o.c.		@ 16" o.c.		@ 16" o.c.	
	@ 16" o.c.		@ 16" o.c.		@ 16" o.c.		@ 16" o.c.	
	@ 16" o.c.		@ 16" o.c.		@ 16" o.c.		@ 16" o.c.	
	@ 16" o.c.		@ 16" o.c.		@ 16" o.c.		@ 16" o.c.	
	@ 16" o.c.		@ 16" o.c.		@ 16" o.c.		@ 16" o.c.	
	@ 16" o.c.		@ 16" o.c.		@ 16" o.c.		@ 16" o.c.	
	@ 16" o.c.		@ 16" o.c.		@ 16" o.c.		@ 16" o.c.	
	@ 16" o.c.		@ 16" o.c.		@ 16" o.c.		@ 16" o.c.	

Figure A Table 11 (Annotation and truncation in size of Table 11 is for clarity of example)

Unique to this table is a listing of alternatives to the code-prescribed fasteners for various framing connections. ISANTA members provide a number of different nail diameters and lengths to the market. When reviewing ESR-1539[®] Table 11, it is the responsibility of the user to determine if the listed number of nails can be driven into a particular

connection. Consideration must be made with regards to size of the power nailer (will it fit into the confines of the area being nailed?), framing member sizes, potential for wood splitting, over crowding of nails, etc.

How are the quantities of nails in the Alternative Fastening Requirements column determined?

In the example shown in Figure C (Table 12 of ESR-1539[®] on the next page) [Top or bottom plate to stud (face/end nail)], the lateral design value (Z) is calculated for each prescribed nail in each of the six codes.

The calculated values of Z for each nail are listed below in Figure B.

2012 IBC[®]

Quantity	Nail Size	Z
2	3½ x .162	189
3	3 x .131	195

2012 IRC[®]

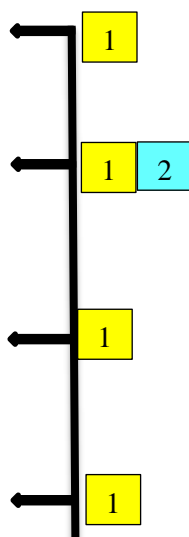
Quantity	Nail Size	Z
3	3½ x .135	207

2018 & 2015 IBC[®]

Quantity	Nail Size	Z
2	3½ x .162	189
3	3 x .131	195
3	3 x .128	186

2021, 2018 & 2015 IRC[®] 2021 IBC[®]

Quantity	Nail Size	Z
2	3½ x .162	189
3	3 x .131	195
3	3 x .128	186
3	3½ x .135	207



connection. In this example: [3] 16d box 3½ x 0.135 inch nails from the 2012 IRC[®]. 2

Combinations for the multiple nail sizes listed in ESR-1539 were evaluated and compared to this target. The Z value of these other nail combinations MUST be equal to or greater than the target, Z=207 in this example.

This can result in a nail that is prescribed in one code with a lower quantity of nails to be listed with a higher quantity of nails in the alternative fastening columns.

Target Z = 207

[2] 3½ x 0.162 Z= 189 **less than target Z** 3

[3] 3½ x 0.162 Z= 283 **exceeds target Z**

Items listed in the Alternative Fastening Requirements column meet or exceed the minimum requirements of all the codes, 2012, 2015, 2018 and 2021 IBC[®] and IRC[®].

Figure B

The prescribed nail combination that provides the **lowest** value of (Z') is identified for each of the eight codes.

Of these four values, the **largest** value of Z is established as the target value of Z for the

TABLE 11—FASTENING SCHEDULE—WALL FRAMING¹ (cont.)

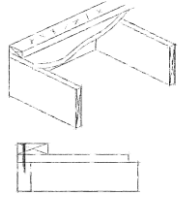
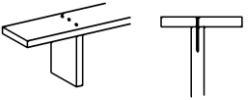
Connection Description	MINIMUM FASTENING REQUIREMENTS PRESCRIBED IN THE CODE								ALTERNATIVE FASTENING REQUIREMENTS			
	2012 IBC Table 2304.9.1		2015 IBC Table 2304.10.1		2018 IBC Table 2304.10.1		2021 IBC Table 2304.10.1		All nails are carbon steel			
	2012 IRC Table R602.3(1)		2015 IRC Table R602.3(1)		2018 IRC Table R602.3(1)		2021 IRC Table R602.3(1)					
	#	Nail Size (Type, inch)	#	Nail Size (Type, inch)	#	Nail Size (Type, inch)	#	Nail Size (Type, inch)	#	Nail Size (Type, inch)	#	Nail Size (Type, inch)
Bottom plate to joist, band joist or blocking at braced walls 	IBC Connection 6b		IBC Connection 15		IBC Connection 15		IBC Connection 15		@ 16" o.c.		@ 12" o.c.	
	@ 16" o.c.		@ 16" o.c.		@ 16" o.c.		@ 16" o.c.		@ 16" o.c.		@ 12" o.c.	
	3	16d box 3½ x .135	2	16d com 3½ x .162	2	16d com 3½ x .162	2	16d com 3½ x .162	3	12d com 3½ x .148	2	16d com 3½ x .162
	4	3 x .131	3	16d box 3½ x .135	3	16d box 3½ x .135	3	16d box 3½ x .135	3	10d com 3 x .148		
			4	3 x .131	4	3 x .131	4	3 x .131	3	16d box 3½ x .135		
	IRC Connection 16		IRC Connection 15		IRC Connection 15		IRC Connection 16		@ 16" o.c.		@ 12" o.c.	
	@ 16" o.c.		@ 16" o.c.		@ 16" o.c.		@ 16" o.c.		@ 16" o.c.		@ 12" o.c.	
	3	16d box 3½ x .135	2	16d com 3½ x .162	2	16d com 3½ x .162	2	16d com 3½ x .162	4	3¼ x .131		
			3	16d box 3½ x .135	3	16d box 3½ x .135	3	16d box 3½ x .135	4	3 x .131		
			4	3 x .131	4	3 x .131	4	3 x .131	4	3¼ x .120		
Top or bottom plate to stud (face/end nail) 	IBC Connection 7 & 8b		IBC Connection 16b & 17		IBC Connection 16b		IBC Connection 16b					
	2	16d com 3½ x .162	2	16d com 3½ x .162	2	16d com 3½ x .162	2	16d com 3½ x .162	3	16d com 3½ x .162	4	3¼ x .131
	3	3 x .131	3	3 x .131	3	3 x .131	3	16d box 3½ x .135	3	12d com 3½ x .148	4	3 x .131
			3	10d box 3 x .128	3	10d box 3 x .128	3	3 x .131	3	10d com 3 x .148	4	8d com 2½ x .131
			3	10d box 3 x .128	3	10d box 3 x .128	3	10d box 3 x .128	3	16d box 3½ x .135	4	3¼ x .120
	IRC Connection 18		IRC Connection 16b		IRC Connection 16b		IRC Connection 17b					
	@ 16" o.c.		@ 16" o.c.		@ 16" o.c.		@ 16" o.c.		@ 16" o.c.		@ 12" o.c.	
	2	16d box 3½ x .135	2	16d com 3½ x .162	2	16d com 3½ x .162	2	16d com 3½ x .162				
			3	16d box 3½ x .135	3	16d box 3½ x .135	3	16d box 3½ x .135				
			3	3 x .131	3	3 x .131	3	3 x .131				
		3	10d box 3 x .128	3	10d box 3 x .128	3	10d box 3 x .128					

Figure C - Table 11
Annotation and truncated size for clarity of example

What determines which value to use when there are multiple options for the same nail?

When a user of ESR-1539[®] is trying to determine how many nails of a certain size can be used there are two options.

- a. consult the code that the structure is being built to (e.g., 2012 IBC[®]) and choose a nail combination prescribed under that code
- b. consult the alternative fastening column and choose a nail combination

Example 1

Example 1: The structure is being built to the **2012 IBC[®]** and the preference would be to use 3 x 0.131 inch nails for a top plate to stud connection. After choosing the proper connection in ESR-1539[®] Table 10, the quantity is determined to be [3] nails for the

IBC connection and [4] nails in the alternative column. The choice would be [3] 3 x 0.131 inch nails in the 2012 IBC[®] column in this case. (See Figure D on next page)

Example 2

Example 2: A similar structure is being built to the **2021 IRC[®]** and the builder wishes to use 3¼ x 0.120 inch nails. This size nail is not prescribed in the 2021 IRC[®], thus the choice comes from the Alternative Fastener listing. In this case [4] 3¼ x 0.120 inch nails would be used in the connection.

What if the structure being built is under the requirements of an earlier code?

The user can either use a copy of the earlier code to look up the fastening requirements or can choose a combination listed in the Alternative Fastening Requirements Column. (See Figure D on next page)

Table 11-Summary of Alternative Fastening Designs Recognized in Table 10 through 12

Figure E (Table 14 in ESR-1539[®]) on page 7, provides a summary of the alternative fasteners listed in Table 11-13 of ESR-1539[®]. These values are acceptable for use in any of the I-Codes published between 2012 - 2021.

As with Tables 11-13, this table is separated into:

- 1 Wall, floor, roof/ceiling framing categories
- 2 Connection description
- 3 Nail size (diameter x length)
- 4 On-center spacing
- 5 Quantity per connection

TABLE 11—FASTENING SCHEDULE—WALL FRAMING (cont.)

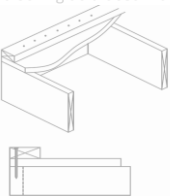
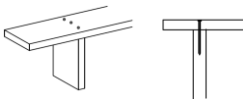
CONNECTION DESCRIPTION	MINIMUM FASTENING REQUIREMENTS PRESCRIBED IN THE CODE								ALTERNATIVE FASTENING REQUIREMENTS			
	2012 IBC Table 2304.9.1		2015 IBC Table 2304.10.1		2018 IBC Table 2304.10.1		2021 IBC ⁽¹⁾ Table 2304.10.2		All nails are carbon steel. ⁽¹⁾			
	2012 IRC Table R602.3(1)		2015 IRC Table R602.3(1)		2018 IRC Table R602.3(1)		2021 IRC ⁽¹⁾ Table R602.3(1)					
	#	Nail Size [Type (inch)]	#	Nail Size [Type (inch)]	#	Nail Size [Type (inch)]	#	Nail Size [Type (inch)]	#	Nail Size [Type (inch)]	#	Nail Size [Type (inch)]
Bottom plate to joist, band joist or blocking at braced walls 	IBC Connection 6b		IBC Connection 15		IBC Connection 15		IBC Connection 15		@ 16" o.c.		@ 12" o.c.	
	@ 16" o.c.		@ 16" o.c.		@ 16" o.c.		@ 16" o.c.		3	12d com (3 1/4 x .148)	2	16d com (3 1/2 x .162)
	3	16d box (3 1/2 x .135)	2	16d com (3 1/2 x .162)	2	16d com (3 1/2 x .162)	2	16d com (3 1/2 x .162)	3	10d com (3 x .148)		
	4	3 x .131	3	16d box (3 1/2 x .135)	3	16d box (3 1/2 x .135)	3	16d box (3 1/2 x .135)	3	16d box (3 1/2 x .135)		
			4	3 x .131	4	3 x .131	4	3 x .131	4	3 1/4 x .131		
	IRC Connection 16		IRC Connection 15		IRC Connection 15		IRC Connection 16		4	3 x .131		
	@ 16" o.c.		@ 16" o.c.		@ 16" o.c.		@ 16" o.c.		4	3 1/4 x .120		
	3	16d box (3 1/2 x .135)	2	16d com (3 1/2 x .162)	2	16d com (3 1/2 x .162)	2	16d com (3 1/2 x .162)	5	3 x .120		
			Example 1									
Top or bottom plate to stud (face/end nail) 	IBC Connection 7 & 8b		IBC Connection 16b & 17		IBC Connection 16b		IBC Connection 16b		3	16d com (3 1/2 x .162)	4	3 1/4 x .131
	2	16d com (3 1/2 x .162)	2	16d com (3 1/2 x .162)	2	16d com (3 1/2 x .162)	2	16d com (3 1/2 x .162)	3	12d com (3 1/4 x .148)	4	3 x .131
	3	3 x .131	3	3 x .131	3	3 x .131	3	16d box (3 1/2 x .135)	3	10d com (3 x .148)	4	8d com (2 1/2 x .131)
			3	10d box (3 x .128)	3	10d box (3 x .128)	3	3 x .131	3	16d box (3 1/2 x .135)	4	3 1/4 x .120
							3	10d box (3 x .128)			4	3 x .120
	IRC Connection 18		IRC Connection 16b		IRC Connection 16b		IRC Connection 17b					
	2	16d box (3 1/2 x .135)	2	16d com (3 1/2 x .162)	2	16d com (3 1/2 x .162)	2	16d com (3 1/2 x .162)				
			3	16d box (3 1/2 x .135)	3	16d box (3 1/2 x .135)	3	16d box (3 1/2 x .135)				
			3	3 x .131	3	3 x .131	3	3 x .131				
			3	10d box (3 x .128)	3	10d box (3 x .128)	3	10d box (3 x .128)				

Figure D - Table 11 From ESR-1539
 Annotation and truncated size of Table 11 is for clarity of example

TABLE 14—SUMMARY OF ALTERNATIVE FASTENING DESIGNS DESCRIBED IN TABLES 11 THROUGH 13^{1,2,3,4}

2 CONNECTION	NAIL SIZE (DIAMETER X LENGTH) (inches)													
	3/2 x 0.162	3/4 x 0.148	3 x 0.148	3/2 x 0.135	3/4 x 0.131	3 x 0.131	2/2 x 0.131	3/4 x 0.120	3 x 0.120	2/2 x 0.113	2 3/8 x 0.113	2 x 0.113	2/4 x 0.099	
Wall Framing														1
Double studs (face nail) Typical	24" o.c.	16" o.c.	16" o.c.	16" o.c.	16" o.c.	16" o.c.	8" o.c.	8" o.c.	8" o.c.					
At braced walls	16" o.c.	12" o.c.	12" o.c.	12" o.c.	12" o.c.	12" o.c.		8" o.c.	8" o.c.					
Abutting studs at corners and intersections Typical	12" o.c.	12" o.c.	12" o.c.	12" o.c.	8" o.c.	8" o.c.	8" o.c.	8" o.c.	8" o.c.					
At braced walls	12" o.c.	12" o.c.	12" o.c.	12" o.c.	12" o.c.	12" o.c.		8" o.c.	8" o.c.					
Built up header 2" to 2" w/ 1/2" spacer	12" o.c.	8" o.c.	8" o.c.	12" o.c.	8" o.c.	8" o.c.		8" o.c.	8" o.c.					
Continuous header to stud (toe nail)	3	4	4	4	4	4	4	5	5	6	6			
Adjacent full-height stud to end of header (toe-nail)	3	4	4	4	4	4		5	5					
Double top plates to each other (face nail)	16" o.c.	12" o.c.	12" o.c.	12" o.c.	12" o.c.	12" o.c.	8" o.c.	8" o.c.	8" o.c.					
Top plate to top plate at end joint (lap splice) (each side of joint)	8	12	12	12	12	12								
For 2015 IRC Connection 13b	10	12	12											
Top plate overlap at corners and intersections (face nail)	2	3	3	3	3	3		4	4					
Sole plate to joist or blocking not at braced wall panels	16" o.c.	12" o.c.	12" o.c.	12" o.c.	12" o.c.	12" o.c.		8" o.c.	8" o.c.					
Sole Plate to joist or blocking at braced wall panel	2 @ 16" o.c.	3 @ 16" o.c.	3 @ 16" o.c.	3 @ 16" o.c.	4 @ 16" o.c.	4 @ 16" o.c.		4 @ 16" o.c.	5 @ 16" o.c.					
Top or sole plate to stud (end nail)	3	3	3	3	4	4	4	4	4					
Stud to top or sole plate (toe-nail)	3	4	4	4	4	4	4	5	5	6	6	6		
Diagonal bracing to stud/plate	2	2	2	2	2	2	2	3	3	3	3			4
Ceiling and Roof Framing														
Blocking between joists or Rafter to Top Plate (toe-nail) (each end)	3	3	3	3	3	3	3	4	4	5				
Blocking between rafter or truss, not at wall top plate (toe nail)	2	2	2	2	2	2	2							
Blocking between rafters or truss, not at wall top plate (end-nail)	2	3	3	3	3	3		4	4					
Flat blocking to truss and web filler – face nail	1 @ 6" o.c.	1 @ 6" o.c.	1 @ 6" o.c.	1 @ 6" o.c.	1 @ 6" o.c.	1 @ 6" o.c.								
Ceiling joist to plate ⁵	3	3	3	3	3	3	3	4	4	5	5	5		
Ceiling joists laps over partitions (no thrust)	3	4	4	4	4	4		5	5					
Collar tie to rafter	3	3	3	4	4	4	5	5	5	6				
Roof rafter to plate (toe-nail) (+ connectors per IBC)	3	3	3	3	4	4	4	4	4					
Roof rafter to 2-by ridge beam (end-nail rafter to beam)	3	4	4	4	4	4		5	5					
Roof rafter to 2-by ridge beam (toe-nail rafter to beam)	3	4	4	4	5	5	5	6	6	6	6	6		
Jack rafter to hip (toe-nail)	3	4	4	4	5	5	5							
Jack rafter to hip (end nail)	3	4	4	4										
Floor Framing														
Joist to sill or girder (toe-nail)	3	3	3	3	3	3	3	4	4	5	5	5		
Rim joist to top plate(Toe-nail)	6" o.c.	6" o.c.	6" o.c.	6" o.c.	6" o.c.	6" o.c.	6" o.c.	4" o.c.	4" o.c.	4" o.c.	4" o.c.	3" o.c.	3" o.c.	
Joist to band Joist (face nail)	3	4	4	4	4	4		6	6					
Built-up girders & beams Face-nail @ top and bottom PLUS # at ends or splice	24" o.c.	24" o.c.	24" o.c.	24" o.c.	24" o.c.	24" o.c.		16" o.c.	16" o.c.					
Ledger Strip	3	3	3	3	3	3		3	4					
Bridging to Joist (toe-nail)	3	4	4	4	5	5	6	6	6					
	2	2	2	2	2	2	2	3	3	3	3	3	3	4

For SI: 1 inch = 25.4 mm

¹Alternative fastening requirements shown in this table have been evaluated as alternatives to the IBC and IRC. They can be used under earlier editions of the IBC and IRC where the prescriptive fastening requirements are no worse than those shown in the Tables 11 through 13.

²This fastening schedule applies to framing members having an actual thickness of 1 1/2" (nominal "2-by" lumber).

³Fastening schedule only applies to buildings of conventional wood frame construction where wind or seismic analysis is not required by the applicable code. In areas where wind or seismic analysis is required, required fastening must be determined by structural analysis.

⁴Nails may be carbon steel (bright or galvanized).

Figure E Table 14 Annotation of Table 14 is for clarity of example

Referenced Documents:

ANSI/AWC NDS-2018 National Design Specification for Wood © American Wood Council 2017

ANSI/AWC SDPWS – 2021 Special Design Provisions for Wind and Seismic © American Wood Council 2020

ASTM F1667/F1667M-21a Standard Specifications for Driven Fasteners: Nails, Spikes and Staples
© ASTM International February 2021

2021, 2018, 2015, 2012 International Building Code (IBC) © International Code Council Inc. ®

2021, 2018, 2015, 2012 International Residential Code (IRC) © International Code Council Inc. ®

AC116 ICC-ES Acceptance Criteria for Nails
© ICC Evaluation Service (ICC-ES) ® March 2021

AC201 ICC-ES Acceptance Criteria for Staples
© ICC Evaluation Service (ICC-ES) ® December 2020

ICC-ES Evaluation Report ESR-1539
© ICC Evaluation Service (ICC-ES) ® July 2022

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